AMENDMENTS TO THE CLAIMS

Claim 1 (Original) A method of 3D holographic recording comprising: dividing a femto-second laser pulse into a plurality of light beams, focusing the divided plurality of light beams in the parallel direction, selecting four light beams, and further focusing these four light beams into a photosensitive material capable of multi-photon exposure so that the photosensitive material is exposed to the interference among the four light beams and multi-photon absorption in the photosensitive material is induced, thus recording a 3D phase hologram on the irradiated portion of the photosensitive material.

Claim 2 (Original) The method of 3D holographic recording as claimed in claim 1, wherein the phase hologram recorded on the irradiated portion of the photosensitive material is a Bragg diffraction lattice.

Claim 3 (Original) The method of 3D holographic recording as claimed in claim 2, wherein the formed Bragg diffraction lattice is used as a photonic crystal.

Claim 4 (Currently Amended) The method of 3D holographic recording as claimed in claim 1~~, 2 or 3~~, wherein the photosensitive material capable of multi-photon exposure is glass that undergoes photo/thermo-induced refractive index change.

Claim 5 (Original) The method of 3D holographic recording as claimed in claim 4, wherein the glass that undergoes photo/thermo-induced refractive index change is glass having a composition close to $15Na_2O$-$5ZnO$-$4Al_2O_3$-$70SiO_2$-$5NaF$-$0.01Ag_2O$-$0.01CeO_2$.

Claim 6 (Currently Amended) A 3D holographic recording system for performing the holographic recording method as claimed in ~~any of claims 1 to 5~~ claim 1, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 7 (Original) The 3D holographic recording system as claimed in claim 6, wherein one of the two lenses is an achromatic lens for focusing the plurality of light beams divided by the diffraction beam splitter into parallel directions, and another is an objective lens of a microscope for focusing the four light beams selected by the aperture on a photosensitive material, exposing the material to the interference among the beams.

Claim 8 (New) The method of 3D holographic recording as claimed in claim 2, wherein the photosensitive material capable of multi-photon exposure is glass that undergoes photo/thermo-induced refractive index change.

Claim 9 (New) The method of 3D holographic recording as claimed in claim 3, wherein the photosensitive material capable of multi-photon exposure is glass that undergoes photo/thermo-induced refractive index change.

Claim 10 (New) The method of 3D holographic recording as claimed in claim 8, wherein the glass that undergoes photo/thermo-induced refractive index change is glass having a composition close to $15Na_2O$-$5ZnO$-$4Al_2O_3$-$70SiO_2$-$5NaF$- $0.01Ag_2O$- $0.01CeO_2$.

Claim 11 (New) The method of 3D holographic recording as claimed in claim 9, wherein the glass that undergoes photo/thermo-induced refractive index change is glass having a composition close to $15Na_2O$-$5ZnO$-$4Al_2O_3$-$70SiO_2$-$5NaF$- $0.01Ag_2O$- $0.01CeO_2$.

Claim 12 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 2, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 13 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 3, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 14 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 4, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 15 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 8, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 16 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 9, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 17 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 5, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 18 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 10, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 19 (New) A 3D holographic recording system for performing the holographic recording method as claimed in claim 11, comprising:

1) a laser light source for generating femto-second laser pulses,

2) a diffraction beam splitter for dividing a femto-second laser pulse into a plurality of light beams,

3) two lenses for focusing the divided femto-second laser pulses, and

4) an aperture for selecting four light beams from among the divided femto-second laser pulses.

Claim 20 (New) The 3D holographic recording system as claimed in claim 12, wherein one of the two lenses is an achromatic lens for focusing the plurality of light beams divided by the diffraction beam splitter into parallel directions, and another is an objective lens of a microscope for focusing the four light beams selected by the aperture on a photosensitive material, exposing the material to the interference among the beams.